Pay-As-You-Throw Options for Rural Solid Waste Management

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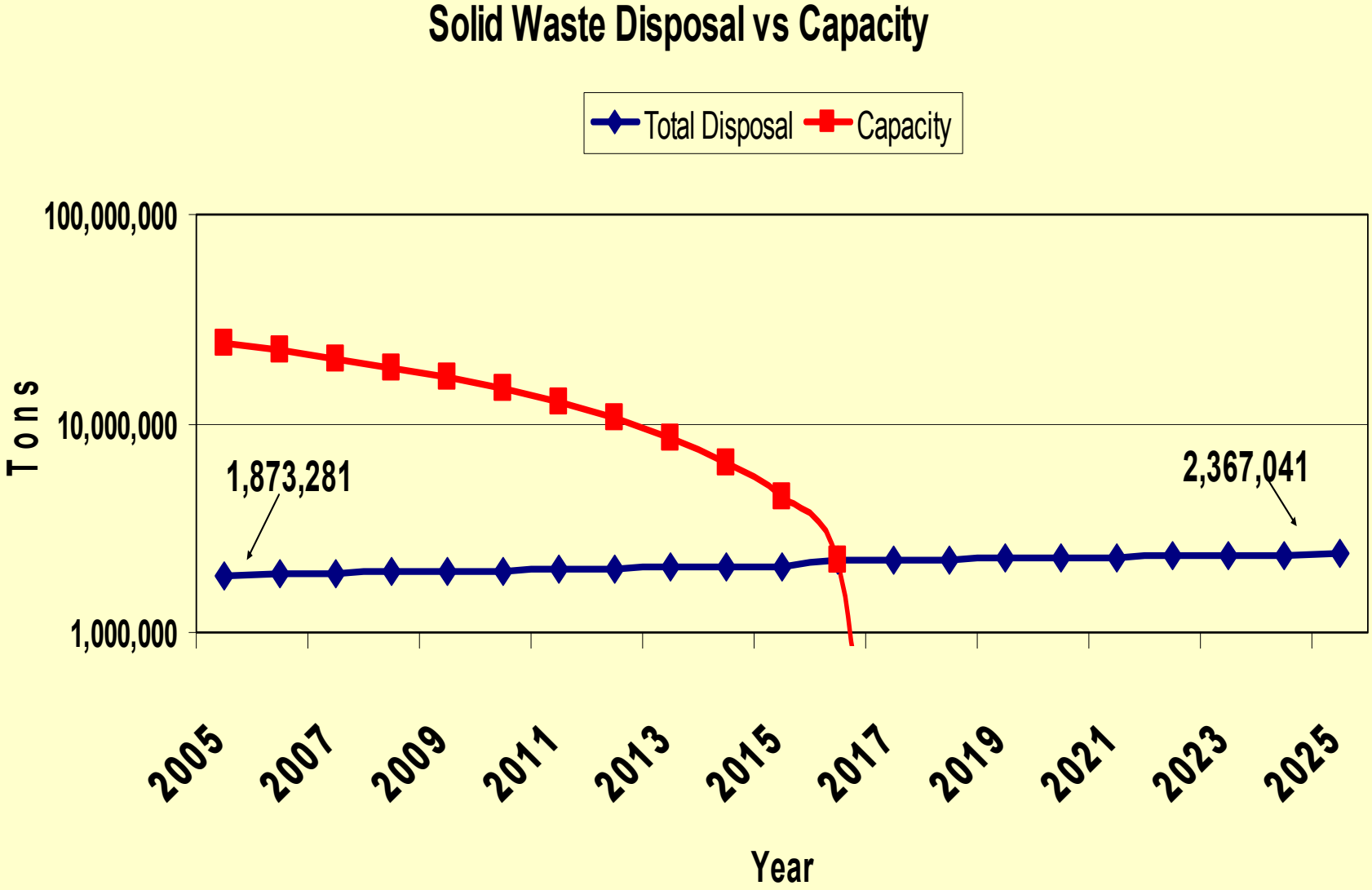
New Hampshire Capacity Projections



What's going on out there?

- Amount of waste generated is increasing
- Recycling rates are not increasing
- Capacity is stagnant (Or declining)
- New disposal facilities are becoming increasingly difficult to site (Wall Street Journal reported Jan. 4, 2006, that 82% of respondants to a poll would actively oppose siting a landfill in their community)
- Costs, particularly transportation and fuel, are increasing rapidly
  - Estimate that tipping fees are increasing at double the rate of inflation (USEPA data)

NH Data - 2004

- 108 towns and cities pay a total of **$41,421,128.29** in budget line item costs to dispose of solid waste
- This is **$68.53** per person or approximately **$240** per household per year.

Overall State Market Estimate

- 108 towns at $41 Million adjusted to 235 towns = $90 million
- Commercial waste is at least equivalent to towns, therefore another $90 million
- Imported waste estimate: 650,000 tons at $75 per ton = $49 million
- C&D processers, 250,000 tons at about $75 per ton = $18 million
- Best guess total for Solid Waste Industry in NH = $247 million, minimum.

Caveat Emptor ($240 is lowball)

- Not all towns capture full costs
  - Not all personnel costs assigned to facility (Health and other benefits in Public Works budget)
  - Not all equipment assigned to facility or pro rata (Plowing, road maintenance, etc)
  - Not all utility cost assigned cleanly
  - Worker's comp, insurances, etc. not assigned

Pay As You Throw

Cutting Costs, Saving Money

- Introduction – Rationale and Issues
- Types of Pay-As-You-Throw Systems
- Characteristics of Communities with Pay-As-You-Throw Systems
- Experience in context of House-to-House Collection Systems in Cities and Towns
- Experience in context of Drop-Off Collection Systems in Rural Areas
- Concluding Comments –Keys to Successful Implementation

Introduction

- Basic rationale
  - Higher costs of municipal solid waste management are encouraging local governments to look for a new financing source such as user fees.
  - Volume or weight-based fees can provide an incentive for recycling and source reduction.
  - Volume or weight-based fees are perceived as more equitable than flat fees or financing from general tax revenues.
- Common issues
  - Perception of tax increase – “getting from here to there.”
  - Population segments – low income, elderly.
  - Reliability as funding source – predictability of revenue trend.
  - Multi- housing units.
  - Inappropriate disposal methods.

Want to be a hero?

- Propose lowering everyone's taxes by at least $240 every year,
- And increase the recycling rate.

Financing Options – Property Taxes

- Advantages
  - Collection of funds is relatively easy to administer
- Disadvantages
  - Generators have no direct incentive for waste reduction
  - Generators cannot reduce their cost due to waste reduction efforts
  - Revenues hard to adjust to unexpected budget increases (tipping fees)
  - Actual total costs difficult to track
  - Lack of equity if commercial and multifamily facilities not served

Financing Options – Flat Fee System

- Advantages
  - Same fee for all
  - Usually easier to adjust fees than change assessments
  - Cost of waste collection is not counted against property tax limits
  - If collection is by private sector, government does not have to get involved in fee collection
- Disadvantages
  - Flat fees do not reward waste reduction
  - Fees generally require poorer residents to pay more than they would under systems funded by property taxes
  - Some residents may try to evade cost by illegal dumping

Variable Rate or Pay As You Throw

- Advantages
  - Provides direct economic incentives that motivate recycling and reduction
  - Resulting in better on-site management of leaf and yard waste
  - Promotes greater awareness about recycling and source reduction
  - Easier to adjust fees than tax assessments
- Disadvantages
  - Can be complex to administer, must have method of computing charges or distributing bags or stickers
  - Difficult to predict revenue
  - Early on, strong, visible enforcement of illegal dumping is required
  - Larger families pay more than smaller families

Radical Idea? Not Really

- Unit-based fees exist all over
  - Water
  - Electricity
  - Telephone
  - Mail
- Why not trash service?

“3E” Benefits of Pay-As-You-Throw

- ***Environmental Sustainability***: Effectively promotes waste reduction
- ***Economic Stability***: Stable revenue covers cost of services
- ***Equity***: Economically fair delivery of services

Types of Pay-As-You-Throw Systems

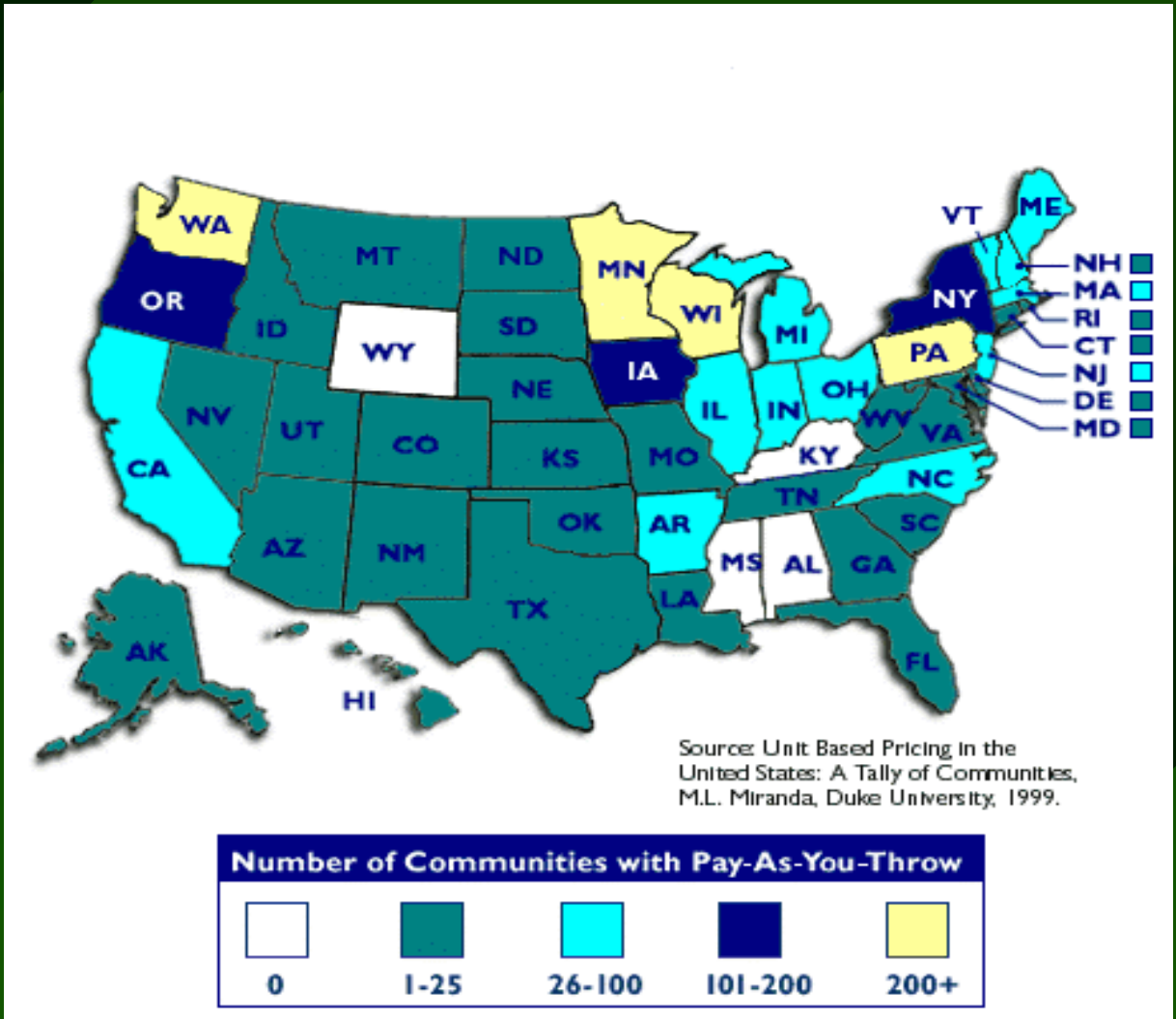
- **Based on volume or weight?**
  - Relationship to collection and disposal costs
  - Costs of available technologies
- **Subscription, bags, or tags?**
  - Curbside versus drop-off
  - Collection technology
  - Other considerations
- **Types of materials included?**
  - Household garbage
  - Recyclables
  - Yard wastes
  - Special wastes
- **Cover all or part of costs?**
  - Fixed versus marginal costs
  - Limiting financial uncertainty
  - Threshold levels

Subscription service is a monthly charge for use of a container, for example, one 35 gallon trash container per week for $8.50 per month. Usually only used with curbside pickup.

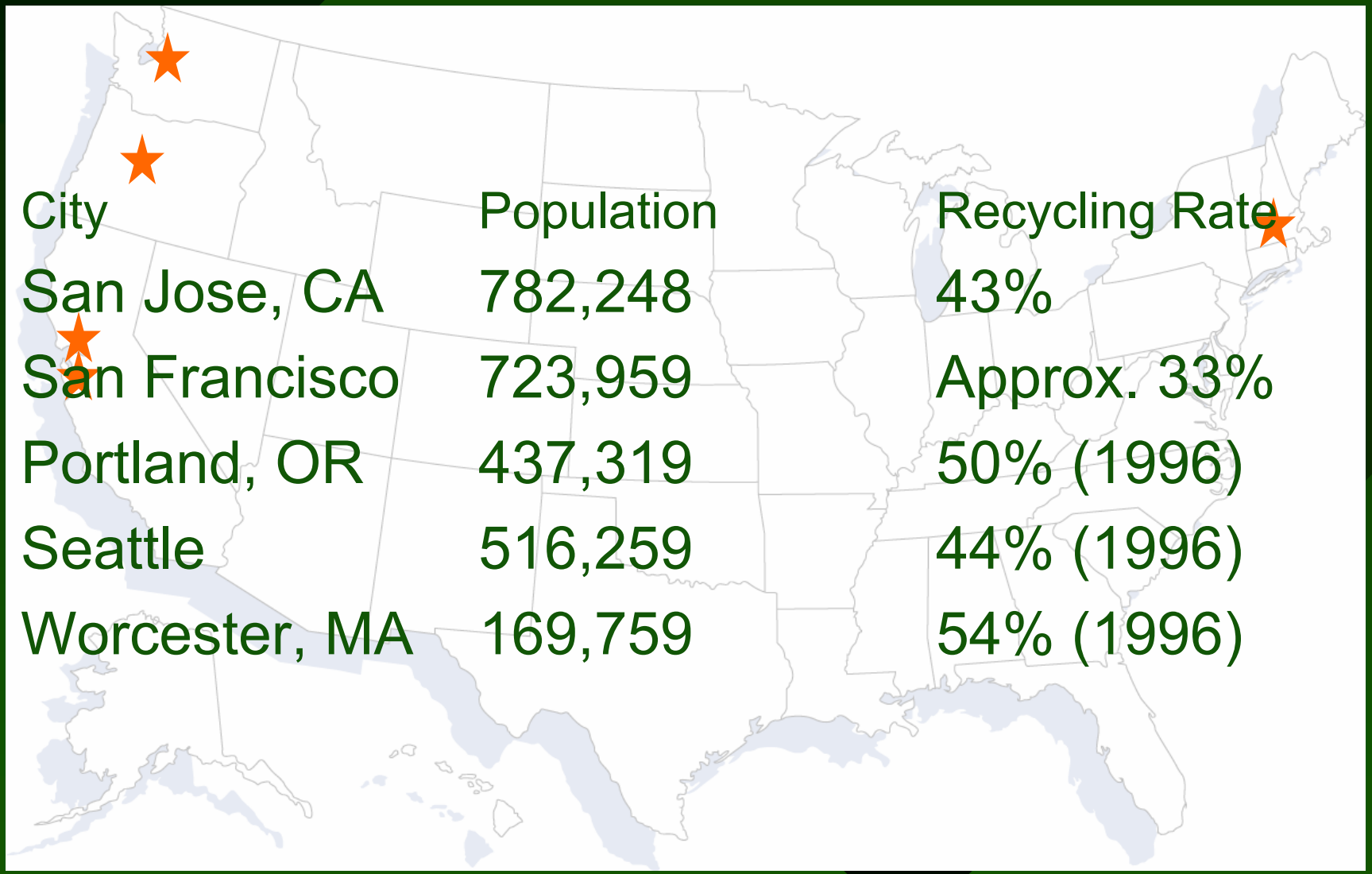
PAYT Growing in the U.S.

- More than **6,000** communities in U.S. practice PAYT
- Cities large and small, rural and urban
- More than **60** cities with populations above **100,000** practice PAYT

Map of PAYT Communities



Large Cities and PAYT



City	Population	Recycling Rate
San Jose, CA	782,248	43%
San Francisco	723,959	Approx. 33%
Portland, OR	437,319	50% (1996)
Seattle	516,259	44% (1996)
Worcester, MA	169,759	54% (1996)

Characteristics of Communities with Pay-As-You-Throw Systems (Cont.)

- **State-level policies and strategies**.
  - **Four states have mandated PAYT systems (in two cases only when a 25% diversion goal was not achieved).**
  - **Four states have included PAYT as one of a list of acceptable or recommended options.**
  - **Four states provided some type of financial incentive.**
  - **An additional eight states have education/promotion programs.**
- **Distribution by type and size of community.**
  - Employed in communities with populations of 100 to more than 800,000, however most tend to be in the range from small towns to medium-sized cities.
  - Very limited application in rural drop-off collection context..
- **Distribution by type of system**.
  - Bag and sticker/tag systems with hybrid financing were relatively more common in smaller towns and rural areas.
  - Subscription systems tend to predominate in larger cities.

Experience in Context of House-to House Collection Systems in Cities and Towns

- A number of individual community PAYT systems have been described in articles published in various magazines and trade publications. In most cases, the systems were reported to reduce the tonnage landfilled and increase recycling substantially, with minor problems.
- The most systematic effort to provide a comparative assessment of the experience and performance of a large number of PAYT systems was conducted by researchers at Duke University from 1990-1992. The following information is drawn from an article reporting on that study of 21 systems.

Summary Statistics on Unit – Pricing Programs.

	Average	High	Low
Unit Price	$1.07	$2.00	$0.68
Change in tonnage landfilled	-40%	-74%	-17%
Change in tonnage recycled	+126%	+456%	+3%
Change in total tonnage generated	-30%	-63%	-10%
Percentage of total waste recycled	19%	39%	2%

Source: Miranda, et al. "Market-Based Incentives and Residential Municipal Solid Waste." Journal of Policy Analysis and Management, Vol. 13, No. 4, 681-698 (1994)

- **Little effect on percentage change in tonnage landfilled from:**
  - Relative aggressiveness of recycling program
  - Level of unit-based fee
- **Little hard evidence regarding composting and source reduction, however:**
  - in only two of the sixteen cases with good recycling data did the increase in tonnage of recyclables account for more than 33% of the reduced tonnage landfilled.
  - in most cases no significant increase in either burning or illegal dumping was noted.

- A report was published in 1996 on a nationwide diversion rate study by Skumatz Economic Research Associates, Inc. (SERA, Inc.)
  - Data from over 500 communities
  - Compared the impact on diversion rates of various program choices.
  - Presence of a variable rate (or PAYT) program increased the diversion rate by 8-11 percentage points.

Experience in Context of Drop-Off Collection Systems in Rural Areas

- Most studies of PAYT systems have focused upon urban/suburban municipalities with curbside collection systems.
- Rural communities face the same pressures and logic that have motivated urban/suburban municipalities to implement PAYT systems, perhaps to even a greater extent.
  - Rising costs, fiscal stress, and resistance to tax increases.
  - Need for an incentive for recycling and source reduction.
  - Desire for equity or fairness in allocation of cost burden.
  - Feasibility of household-level composting.

Experience in Context of Drop-Off Collection Systems in Rural Areas (cont.)

- However, conventional wisdom has suggested that PAYT systems will not work in a rural drop-off context, due to cultural, political or administrative constraints.
- To call into question this conventional wisdom, I conducted six case studies that examined in detail the experience of six rural communities that have implemented PAYT systems within a drop-off collection system.

Geographic & Demographic Characteristics

Name of Jurisdiction	Monroe	Tift	Dubois	Weathers-field	Houston	Lane
Type of Jurisdiction	County[1]	County	County	Town	County	County
State Location	Wisconsin	Georgia	Indiana	Vermont	Minnesota	Oregon
Area (sq. mi.)	915	269	433	50	576	4,620
Total population	37,300	35,000	36,600	2,700	18,500	298,000
Population density (per sq. mi.)	41	130	85	54	32	65
Percent of population using drop-off sites	20%	45%	50%	75%	35%	50%
Total population using drop-off sites	7,500	15,800	18,300	2,000	6,500	149,000

[1] - Volume-based user fees implemented by 11 towns within Monroe County.

User Fee Systems: Basic Elements

Name of Jurisdiction	Monroe	Tift	Dubois	Weathersfield	Houston	Lane
Date initiated	90-92	Oct/92	April/91	July/91	Oct/91	July/80
Type of bag	Purchased	Purchased	Own	Own	Own	Own
Fee mechanism	Bag	Bag	Sticker	Token	Cash	Cash
Fee/Unit of volume	$1.10/33 Gal	$1.50/38 Gal[3]	$.75/45 Gal	$1.00/30 Gal	$1.30/30 Gal[1]	$2.00/32 Gal[2]
Minimum fee	$1.10	$0.45	$0.75	$1.00	$1.30	$6.00
Credit or payment for recyclables	No	No	No	No	Buyback for aluminum	$1.50 credit for 10 lbs.+
Fee paid at D-O sites	Yes	No	Yes	No	Yes	Yes
Fee paid at municipal offices	Yes	No	Yes	Yes	No	No
Fee Paid at Stores	No	Yes	No	Yes	No	No
Percentage of total cost covered by fee	Variable	63%	33%	57%	26%	100%
General property tax funding	Yes	Yes	Yes	No	Yes	No
Flat assessment	No	No	No	$25/Parcel/Yr	$.75/HH/Mo	No

[1]- Or $.07/lb. [2] - Other rates: $12/pickup load or $5/cy. [3] - Other bag sizes and fees; $.45/8 gal. and $.75/16 gal.

[o] - Although the SWM system is self-supporting overall, the rural drop-off collection component is "subsidized" to some extent by other system components.

Measures of Impact on Recycling

Name of Jurisdiction	Monroe	Tift	Dubois	Weathersfield	Houston	Lane
Participation in recycling[1] (%)	NA	80	65	85	95	75
Generation of recyclables[2] (lbs. per capita in 1993)	98	38	45	148	146	59
Diversion/Recovery rates[3] (% in 1993)	20-25	NA	NA	29	34	28

NA – Not Available

[1] - Percentage of residents using drop-off sites for garbage disposal who separate out some recyclables, based on careful head counts in Dubois and Tift Counties and rough approximations elsewhere.

[2] - For typical set of residential materials, including aluminum and steel cans, glass, plastic, and various forms of paper. For Houston and Monroe Counties, only county-wide tonnage figures were available. Thus tonnage is divided by total county population, including residents served by curbside collection programs. In the other four jurisdictions, tonnage collected from drop-off sites only is divided by the estimated population using the sites.

[3] - These diversion/recovery rates are jurisdiction-wide and thus include materials collected in curbside programs as well as items like white goods and yard waste. Exactly what is counted may differ somewhat across cases.

What is the number one fear that rural community leaders would have if they adopted a PAYT system?

- INAPPROPRIATE DISPOSAL
  - Believe it or not, case studies and other research studies suggest that in the vast majority of rural communities that have adopted a PAYT, this has not been a major, long-term problem.
  - The Duke researchers mentioned earlier published an article in 2002 that addressed just this question, though not strictly for rural communities.

Problems- Inappropriate Disposal

- Types of Inappropriate Disposal
  - Illegal dumping/littering
  - Backyard burning
  - Dumping commercial dumpsters
  - Charitable dumping
  - Residues in recycling bin
  - Toting (to employer or other jurisdiction)

Recommendations/Observations Regarding Inappropriate Disposal

- Provide legal mechanisms for decreasing set-outs (particularly special wastes such as furniture and appliances).
- Lock commercial dumpsters and shut down unstaffed drop-off sites.
- Most inappropriate disposal takes the form of activities that transfer costs to other parties.

Recommendations/Observations Regarding Inappropriate Disposal (cont.)

- Communities should be most concerned with inappropriate disposal options that create additional cleanup and aesthetic costs.
- Communities appear to go through a transitional period (with higher levels of inappropriate disposal) immediately following implementation of a PAYT system
- Education and enforcement are critical to the success of PAYT systems
- Community characteristics influence the level of inappropriate disposal more strongly than the level of unit prices in a PAYT system.

Keys to Successful Implementation

- Implementation of PAYT systems in a rural drop-off context appears feasible across:
  - A range of geographic and demographic conditions.
  - A range of system characteristics.
- PAYT systems within rural drop-off collection systems appear capable of:
  - Motivating relatively high levels of participation in the separation of recyclables.
  - Contributing to relatively high per capita collection of recyclables and county-wide diversion or recovery rates.
- Most residents will support (or accept) PAYT systems if they are:
  - Well-informed of the need and logic in advance.
  - Given reasonable options for gaining some measure of control over their total bill.

March 2006 Canterbury Warrant

To see if the town will vote to authorize the Selectmen to establish and implement a mandatory "pay by bag" program and further to adopt the provisions of RSA 31:95-c for the purpose of accounting for the sale of solid waste bags and tags or other receipts as budgeted annually, to be used to pay the cost of collection and disposal of residential solid waste and such other direct and indirect costs as budgeted annually. Such revenues and expenditures shall be accounted for in a special revenue fund to be known as the Pay by Bag fund, separate from the general fund. Any surplus in said fund shall not be deemed part of the general fund accumulated surplus and shall be expended only after a vote by legislative body to appropriate a specific amount from said fund for a specific purpose related to the purpose of the fund or source of revenue.

Voters passed the article by a ballot vote of 265 to 113

Keys to successful Implementation (cont.)

- Support may also come more easily if:
  - A hybrid financing strategy is employed to keep per bag fees at modest levels.
  - User fees are initiated at the time of a significant enhancement in the collection system.
- At least minor problems with inappropriate disposal can be expected, but reasonable measures can be taken to reduce the likelihood of major, long term problems.

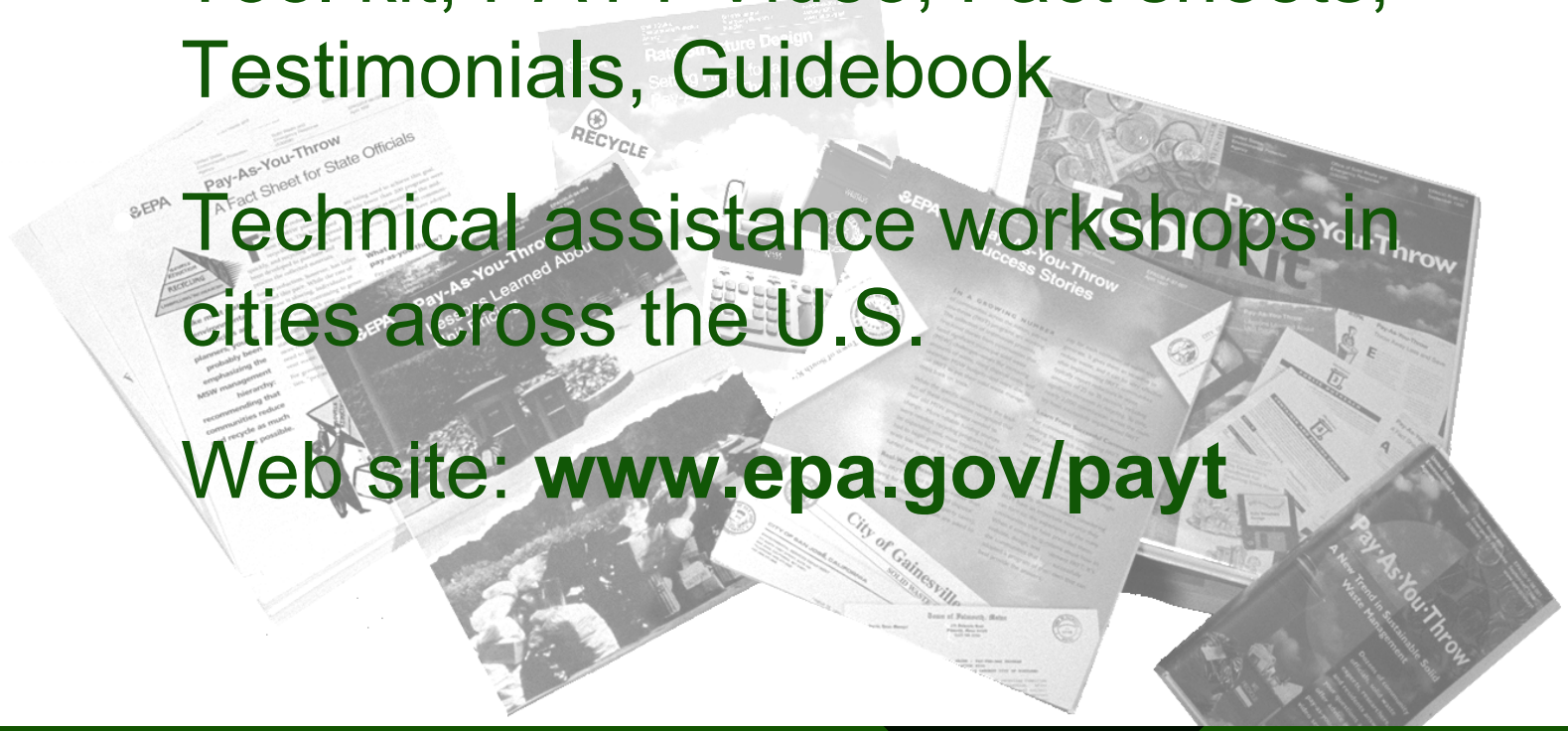
EPA Tools/Technical Assistance

What is EPA doing to support PAYT?

Tool kit, PAYT Video, Fact sheets, Testimonials, Guidebook

Technical assistance workshops in cities across the U.S.

Web site: **www.epa.gov/payt**



Climate Change

- PAYT helps reduce the greenhouse gas emissions associated with making, distributing, and disposing of products.
- If 200 more communities adopted PAYT and reduced waste by 20%, greenhouse gas emissions would be cut by 3.8 million Metric Tons of Carbon Equivalent.
- This equals taking almost 2.8 million cars off the road for almost a year.

Libertarian think tank backs Pay-As-You-Throw

Variable rate billing for trash hauling services led to a 17 percent reduction in the waste stream and an increase in recycling, according to a study by The Reason Foundation.

As reported in the November 1, 2002, issue of **Solid Waste Report**, the foundation's research found variable rate programs in 46 states, covering about 20 percent of the country's population.

"Pay-as-you-throw programs encourage recycling, composting and source reduction – and source reduction is the cheapest waste management strategy," said Kenneth Green, chief scientist with the California-based libertarian think tank.




Other Cost Concerns

Its not just the trash!



Trash Concerns

- MSW
  - Tipping fees
  - Recycling costs or profits
  - Handling costs
- Durable goods disposal
- Construction and Demolition
- Furniture
- Electronics
- Tires
- Household Hazardous Waste
- Gas Cylinders
- Commercial Waste
- Leaf and Yard Waste
- Universal Wastes
- Batteries
- Used Oil

All of these can have a fee structure!

PAYT Summary

- It works
- People are use to fee based services
  - Electricity
  - Telephone
  - Water
- Yields a significant increase in recycling rates with a corresponding reduction in budget costs for a municipality.

We are from the government and we are here to help!

- Solid Waste Technical Assistance has sample literature, videos, presentations, workbooks, etc.
- We can help you get bags and other materials.
- Sample warrant articles